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105 CMR 525.000: NEWBURYPORT SHELLFISH TREATMENT PLANT

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525.001: Purpose

The Shellfish Treatment Plant shall be used for the treatment of only those shellfish harvested from shellfish areas in the Commonwealth as designated suitable for such purposes by the Department of Public Health. The treatment process subject to 105 CMR 525.000 is designed to purge shellfish of bacterial contamination to the extent that such shellfish are rendered safe for human consumption and suitable for food purposes.

525.002: Definitions

For the purposes of 105 CMR 525.000 the following definitions shall apply:

Coliform: Coliform group of bacteria

Department: Department of Public Health

Division: Division of Marine Fisheries

E.T.C.P.C.: Elevated Temperature Coliform Plate Count

F.C.: Fecal coliform

Lot: All shellfish from a single digger on a single day from one or more areas

M.P.N.: Most Probable Number (of coliform bacteria)

N.S.S.P. Manual: National Shellfish Sanitation Program Manual of Operations, Parts I, II, III 1965 Revision

Pool: Sampling of 12 or more shellfish randomly selected from a lot for bacterial analysis

Shellfish: soft shell clams (*mya arenaris*)

T.C.: Total coliform

Treatment Plant: Newburyport Shellfish Treatment Plant

U.V.: Ultraviolet

525.003: Supervision

The Division shall designate a reliable individual to be accountable for compliance with the items in the NSSP Manual having to do with plant and personnel cleanliness, and other duties as assigned by the Division. This individual shall be approved by the Department of Public Health.

The treatment plant shall be used for no purpose other than the treatment of shellfish and research activities related thereto. No person not an employee of the shellfish treatment plant or a representative of the Department of Public Health or Department of Natural Resources shall be allowed access to the treatment plant or to the laboratory except by permission of the person in charge of the Shellfish Treatment Plant.

No animals shall be allowed inside the treatment plant.

525.004: Plant Design and Sanitation

(A) Tank Design and Construction.

(1) The tanks shall be designed to allow for good water circulation and prevent short-circuiting of the sea water. The tanks shall be of sufficient size to allow at least five cubic feet of sea water per bushel of clams in the tank. If the tank is rectangular in shape, length to width ratios should be from 2:1 to 4:1.

(2) Tanks shall be designed so that scum and sludge (shellfish feces and pseudo-feces, sand, grit, etc) can be easily removed or flushed out. The bottom

should be sloped longitudinally at least $\frac{1}{4}$ to $\frac{1}{2}$ inch per foot toward the outlet end.

(3) To facilitate proper cleaning and sanitation, as well as proper treatment of shellfish, tanks shall be constructed from a substance which is impervious, non-toxic and inert. Coatings, when used, may include epoxy resins, powdered polyesters, vinyl bituminous water-tank paint, and paraffin. These coatings are not only for waterproofing but should provide a smooth, hard, non-porous surface for cleanability.

(B) Plant Sanitation.

(1) The general sanitation requirements of the plant, physical structure, equipment and utensils, and the sanitary requirements for operations, processes, and personnel shall follow the regulations issued under the Federal Food, Drug and Cosmetic Act: "Human Foods, Current Good Manufacturing Practice (Sanitation) in Manufacture, Processing, Packing or Molding" Part 128, Title 21, Code of Federal Regulations, H.E.W., FDA, issued May 1969, and/or where applicable the sanitation requirements for plant, handling of Shell stock and personnel given in Part II of the NSSP Manual of Operations 1965 revision "Sanitation of the Harvesting and Processing of Shellfish".

(2) Materials: The equipment in the food-product zone shall be made of smooth, corrosion-resistant, impervious, non-toxic material which will not readily disintegrate or crack; and shall be so constructed as to be readily cleaned, and shall be kept in good repair.

(3) Plumbing and Related Facilities:

(a) Plumbing shall be installed in compliance with state and local plumbing ordinances. Lavatories shall have running hot and cold water and shall be so located that their use by plant personnel can be readily observed. Signs shall be posted in toilet rooms and near lavatories, directing employees to wash their hands before starting work and after each interruption.

(b) Pump volutes and impellers shall be of a material which is non-toxic.

(c) Plant domestic sewage shall be discharged into a sewage disposal system constructed in accordance with state and local requirements.

(4) Floors. Floors of rooms in which shellfish are handled or stored shall be constructed of concrete or other material impervious to water; shall be graded to drain quickly; shall be free from cracks and uneven surfaces that interfere with proper cleaning or drainage; and shall be maintained in good repair.

(5) Wall and ceilings. The interior surfaces of rooms in which shellfish are handled or stored shall be smooth, washable, light colored and kept in good repair.

(6) Fly-control Measures. All outer openings to the treatment plant shall be effectively screened during the seasons when flies are present, unless other effective means are provided for preventing the entrance of flies. Effective in plant fly control measures shall be used to kill or capture flies which may enter the plant despite external controls.

(7) Lighting.

(a) Ample natural and/or artificial light shall be provided in all working and

storage rooms.

(b) To insure constant conditions for the shellfish undergoing the treatment process, it is desirable to maintain at least ten foot candles of illumination at the water surface level of the depuration tanks throughout the day. These water surfaces should not be subjected to the variations of direct sunlight.

(8) Heating and Ventilation. Working rooms shall be ventilated and shall be heated when necessary.

(9) Water Supply. The water supply for non-depuration uses shall be easily accessible, adequate, and of a safe and sanitary quality.

(10) Rodent Control. The treatment plant shall be free from rodents.

(11) General Cleanliness. The treatment plant shall be kept clean and free of litter and rubbish. Miscellaneous and unused equipment and articles which are not necessary to plant operations shall not be stored in rooms used for depuration or Shell stock storage. Culled Shell stock shall be removed promptly from the plant.

(12) Health of Personnel. Any person known to be infected with any disease in a communicable form, or to be a carrier of any disease which can be transmitted through the handling of shellfish, or who has an infected wound or open lesion on any exposed portion of his body, shall be excluded from handling shellfish in the plant pending appropriate treatment and return to health.

525.005: Laboratory Procedures

(A) The laboratory shall be approved by the Department of Public Health and shall be supervised and operated by a person or persons approved in writing by the Department of Public Health.

(B) The laboratory shall conduct routine bacterial examinations of process water and shellfish and special examinations when necessary or required.

(C) Bacterial examinations of shellfish and seawater shall be made in accordance with the latest edition of "The Recommended Procedures for Bacterial Examination of Sea Water and Shellfish" of the American Public Health Association, or other methods approved by the Department of Public Health.

(D) All other physical, chemical or biological tests shall be conducted according to the latest edition of "Standard Methods for the Examination of Water and Wastewater, prepared and published by APHA, AWWA, WPCF, or other methods approved by the Department of Public Health.

(E) In the event of the installation of a new laboratory, new laboratory equipment or the initiation of new laboratory procedures, the following sampling schedule shall be followed:

(1) One shellfish sample shall be collected from each harvesting area lot for bacterial examination before the shellfish are submitted to the treatment process.

(2) One shellfish sample shall be collected from each harvesting area lot for

bacterial examination after 24 hours of depuration.

(3) One shellfish sample shall be collected from each harvesting area lot for bacterial examination after the shellfish have completed the treatment processes.

(4) The above schedule shall be followed until such time as the Department of Public Health and the plant director, after review of the results, determine that the laboratory procedures are providing valid results. Then, routine sampling procedure shall be followed.

525.006: Plant Operations

(A) Source of Shellfish. Shellfish shall be accepted for treatment at a shellfish treatment plant only from areas approved for this purpose by the Department of Public Health. A detailed description of all areas from which shellfish may be taken for treatment purposes, updated as necessary, shall be filed by the Department with the Division of Marine Fisheries and the Division of Law Enforcement of the Department of Natural Resources and the treatment plant supervisor. The person in immediate charge of the shellfish treatment plant, or his assistant, shall inspect all containers of raw shellfish upon arrival at the plant to verify that they contain the quantity stated on the master digger's reports.

(B) Shellfish Containers. Shellfish shall be accepted for treatment and released after treatment in clean containers only. All containers shall be constructed of wood or rust-proof material, and kept clean and free from foreign matter. Burlap bags or similar absorbent material shall not be used for transporting shellfish to the treatment plant nor for removing released shellfish from the plant.

(C) Culling. All untreated shellfish prior to, or upon arrival at the plant, shall be thoroughly inspected and culled by the master digger or his agent to the satisfaction of the person in charge of the shellfish treatment plant. All dead shellfish or shellfish in broken or cracked shells shall be destroyed. If the culling and inspection of the shellfish are not carried out to the satisfaction of the person in charge, he may hold the shellfish for action by the Division of Law Enforcement. The person in charge of the treatment plant shall be held responsible for suitable culling, and for the removal and disposal of dead shellfish or shellfish broken or cracked shells from culling both before and after depuration.

(D) Washing Shellfish.

(1) Before treatment all shellfish shall be thoroughly washed or hosed with water taken from a source approved by the Department.

(2) After treatment all shellfish shall be thoroughly washed or hosed with water taken from a source approved by the Department.

(3) If chlorinated water is used in washing the shellfish the water shall contain throughout this processes at least 20 parts per million of available chlorine.

(E) Baskets Used in Treatment Process. All baskets used in the treatment process shall be of suitable size, designed for easy handling and made of impervious

material(s). The baskets shall be meshed to allow water to flow freely over the clams in the treatment tanks. The baskets shall not be filled beyond the level which will allow free circulation of water during the treatment processes. Baskets shall be stacked to allow free circulation of water. Containers used for treatment purposes shall not be used for any other purpose and no containers or other equipment used on the shellfish flats shall be placed in the treatment tanks.

(F) Shellfish Treatment. All shellfish upon receipt at the treatment plant shall be promptly treated or place in controlled storage. Shellfish shall be treated for a period of 48 hours or for such time as authorized by the Department.

(G) Washing Treatment Tanks. After each 24 hours that the shellfish are in the treatment tanks, the sea water in the tanks should be drained out and the shellfish hosed down thoroughly with either potable tap water or treated sea water. Feces and pseudo feces and any other waste matter must be flushed out of the tank. Immediately after hosing, the tanks shall again be filled with treated sea water.

525.007: Shellfish Sampling Procedures

(A) Newly Opened Areas.

(1) When shellfish are delivered to the treatment plant from a newly opened or re-opened shellfish growing area, the following schedule shall be followed:

(a) Shellfish samples shall be collected for bacterial examination before the shellfish are submitted to the treatment process.

(b) Shellfish samples shall be collected for bacterial examination after 24 hours of depuration.

(c) Shellfish samples shall be collected for bacterial examination after the shellfish have completed the treatment process.

(2) The above schedule shall be followed until such time as the Department of Public Health and the plant supervisor after review of the results, determine that the shellfish from such area(s) are responding properly to the treatment process. After this determination the routine sampling procedures shall be followed.

525.008: Routine Sampling Procedure

A routine sampling procedure defining a program of daily sampling shall be established by the Department of Public Health. This sampling procedure will be contained in a Memorandum of Understanding as agreed upon by the Department of Natural Resources and the Department of Public Health.

525.009: Process Water Control-Sampling Procedures

(A) General. All controlled processes require quality tests to determine if standards are being met and if controls are effective. The treatment of shellfish is a controlled process designed to reduce bacterial contamination to an acceptable level. To insure the continuing effectiveness of the shellfish treatment process the minimum

sampling procedure as described below shall be followed.

(B) Raw Sea Water in the Plant.

- (1) Type of Test: Temperature, turbidity, salinity, dissolved oxygen
- (2) Frequency: once per day
- (3) Type of test: total coliform (T.C.)
- (4) Frequency: once per week

(C) Effluent from Ultraviolet (UV) Light Treatment Unit.

- (1) Type of Test: Bacteriological
- (2) Frequency: every other day per unit

(D) Sea Water in Treatment Tanks.

- (1) Type of Test: Bacteriological, dissolved oxygen, temperature
- (2) Frequency: every other day

525.010: Treatment Process Water Standards

(A) Bacteriological. All water to be used in shellfish treatment tanks shall be subjected to ultraviolet light treatment. In a flow-through system the water discharged from the ultraviolet unit shall be of bacterial quality equal to or better than the quality of water required in the National Shellfish Sanitation Program Manual of Operations, Part I.

In a re-circulating system the water discharged from the UV unit shall be of bacterial quality equal to or better than the quality of water required in the U.S.P.H.S. Drinking Water Standards, as stated in the NSSP Manual, Part I.

(B) Dissolved Oxygen. Determination of the amount of dissolved oxygen in the water in the treatment tanks shall be made in order to ascertain that oxygen to the extent of at least 5mg/l is always present.

(C) Temperature. Sea water temperatures shall be monitored during the treatment processes. Temperatures of seawater used in the treatment process shall be suitable for depuration.

(D) Turbidity. Turbidity in the treatment process water shall not generally exceed 20 J.T.U. (Jackson Turbidity Units).

(E) Salinity. Salinity of the treatment water shall fall between the limits of plus or minus 20% of the value of the harvest area.

Table 1. Sea Water Quality - Influent to Depuration Tanks

<u>Parameter</u>	<u>Minimum</u>	<u>Maximum</u>
Temperature	Suitable	Suitable

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Turbidity (Jackson Turbidity Units)	0	20 units
pH	7.0	8.4
Oxygen (milligrams/liter)	5.0	Saturation
<u>Metallic ions & compounds</u>	Not exceeding values of normal sea water	
<u>Pesticides, detergents and radioisotopes</u>	Not exceeding values obtained from approved growing areas.	
<u>Marine toxins</u>	Not present in quantities which would be concentrated by shellfish to a level exceeding 80 micrograms per 100 grams for Paralytic Shellfish Poisoning or 20 mouse units per 100 grams of meats for Ciguatera-like poison.	

525.011: Ultraviolet (UV) Unit

(A) General. Any UV unit which provides the required treatment and desired results may be used for the purification of water to be used in the treatment process. The unit shall be designed to deliver at peak load at least one gallon per minute of treated water per bushel of clams.

(B) Cautions and Maintenance.

(1) UV tubes shall be checked for intensity (commercial meters are available) on a monthly basis and shall be replaced when they reach a point of 60% efficiency. A log of intensity shall be kept and an orderly numbering procedure for units and bulbs established.

(2) UV tubes and reflectors shall be cleaned daily. Cleaning may be done with a clean damp cloth or sponge.

(3) Signs stating "Ultraviolet Light Danger to Eyes - Do Not Look at Bulbs Without Eye Protection" shall be displayed in full view of personnel and authorized visitors. Skin protection especially for the face and hands shall be provided for personnel monitoring the bulbs. Eye protection may be accomplished by the use of ordinary glasses with solid side pieces or special goggles made for this purpose. Protection for the head is afforded by a hat and for the hands by the use of gloves. Face protection may be afforded by the use of certain clear plastics.

(4) An automatic shutoff switch shall be provided to break the electric circuit, thus shutting off the current to the UV bulbs when the lid of the UV unit is raised.

(5) A device of some kind, i.e. clock, off-on current recorder, etc. shall be installed in line with all UV units to measure continuity of operation as well as to measure bulb life.

525.012: Shell stock Storage

(A) Refrigeration of Shell stock. Treated shellfish shall be placed in cold storage if they are not to be released immediately. The temperature for cold storage shall be 50°F or less as required by the National Shellfish Sanitation Program. Refrigerated storage compartments shall be provided for treated shellfish and all such shellfish shall be kept wholly separate from untreated shellfish. The said compartments shall be under the supervision of the person in charge of the plant, and adequate measures shall be taken to prevent the unauthorized removal of any shellfish. All shellfish shall be handled and stored under such sanitary conditions as will protect the quality of the product.

(B) Controlled Storage. Shellfish which are received at the treatment plant and cannot be processed immediately shall be placed in controlled storage. It is important in order to insure proper treatment following storage that the temperature at which shellfish are held does not vary greatly from the temperature of the processed water. Therefore it is recommended that the storage for untreated shellfish include a controlled temperature of approximately the same level as the process sea water if the shellfish are to be processed within 24 hours of harvesting. (To avoid bacterial multiplication or spoilage of the shellfish the maximum storage temperature should be 70°F) If shellfish are stored for periods longer than 24 hours before treatment then the controlled storage temperatures shall be 50°F or less as required by the National Shellfish Sanitation Program. A gradual change of temperature from the storage temperature to the treatment water temperature may then be necessary to insure proper treatment.

525.013: Tagging and Release of Shellfish

No shellfish shall be removed from the treatment plant until approved for release by the person in charge as provided in 105 CMR 525.000. All containers of treated shellfish before being released from the Shellfish Treatment Plant shall be suitably tagged with a uniform tag in substantial accordance with the most recent edition of the "National Shellfish Sanitation Program Manual of Operations of Recommended Practice for Sanitary Control of the Shellfish Industry Recommended by the United States Public Health Service". The tag shall contain a number given the treatment plant by the Director of Division of Marine Fisheries, the permit number of the master digger, the quantity of shellfish and the date the shellfish were released from the treatment plant. Neither the person in charge of the treatment plant nor the Commonwealth shall be held liable for financial losses incurred by the master digger due to failure of the treatment process, confiscation of shellfish, loss of shellfish or other reasons.

525.014: Records

(A) Records containing the following information shall be available at the treatment

plant at all times:

- (1) For shellfish presently undergoing the treatment process:
 - (a) city(ies) or town(s) from which shellfish were harvested
 - (b) name and/or number of harvesting area(s)
 - (c) name and permit number of master digger(s)
 - (d) date received
 - (e) quantity of shellfish in tank(s)
 - (f) date and time of initiation of treatment
- (2) For each lot of shellfish which have completed the treatment process
 - (a) city(ies) or town(s) from which shellfish were harvested
 - (b) named and/or number of harvesting area(s)
 - (c) name and permit number of master digger
 - (d) date received into plant
 - (e) date released from plant
 - (f) date and time of initiation of treatment
 - (g) date and time of termination of treatment
 - (h) number of hours treated
 - (i) all laboratory results as specified

(B) The person in charge of the plant or his assistant shall send to the Department of Public Health on a bi-weekly basis a copy of the daily records required under 105 CMR 525.000 and the results of all shellfish and water samples analyzed during that bi-weekly period.

525.015: Changes in 105 CMR 525.000

All other rules and regulations prepared by this Department relative to shellfish shall be followed in the operation of all shellfish treatment plants. 105 CMR 525.000 when adopted rescinds all other rules and regulations previously adopted for the operation of the Newburyport Shellfish Treatment Plant.

REGULATORY AUTHORITY

105 CMR 525.000: M.G.L. c. 130, § 76.